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JANUARY 22,  
1951

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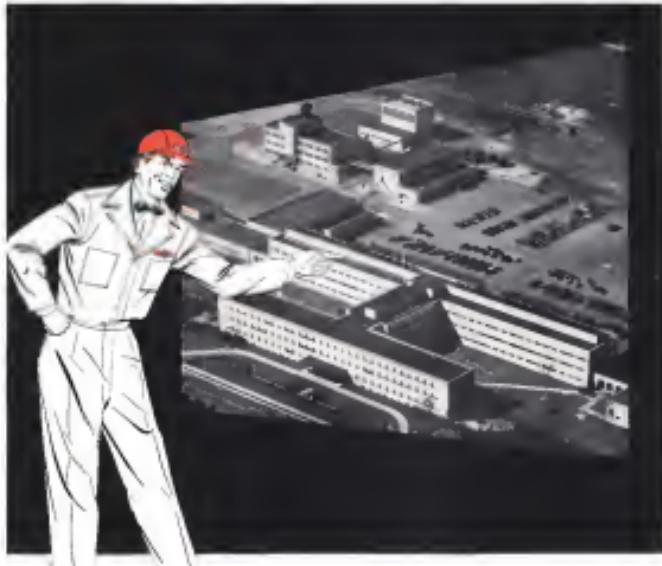
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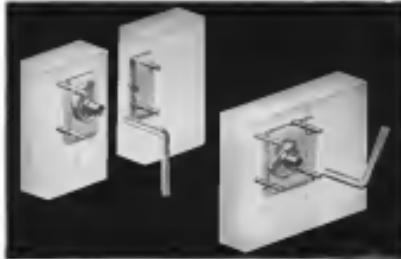
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## New Roto-Lock Fasteners Solve Demountable Panel Problems



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## NEWS DIGEST

### DOMESTIC

Six B-52 bombers landed in England after nonstop flights from Westover, Mass., to Lajes Field in Lajes, Azores, and each took a different route to England, completing 7,000-mile flight in about 24 hours flying time. The planes carried combat loads, dropping practice bombs en route. It was the first time B-52s had landed on foreign soil.

NWA's 2-0-2 model jet burned near Bremerton, Wash., on a flight from Spokane to Seattle, killing all aboard—seven passengers and three crew members. Accident occurred five minutes after takeoff.

Jet combat efficiency is highlighted in combat reports from Korea on the Grumman Panther cruise-based fighter which credits the plane with having achieved a record of 96 percent combat availability in the period up to Decem- ber, 1959.

McDonnell F3H Demon aircraft operated by Marine Fighter Squadron VMF-122 at Cherry Point have been making warlike penetration flights of up to 60,700 ft before breaking through the contest. Training is to step up all-weather operating efficiency.

Larger fuel capacity is being built into North America's T-33 aircraft as a result of comments received from users using the new plane. The company is also considering substitution of a revised instrument flying lead.

Orlando AFB, Fla., has been officially activated by the 146th Air Force, with Lt. Col. Charles DeLoach named commanding officer.

Bell H-135 seaplanes assigned to the Navy in Korea are operating with the Marines and Army ground forces in escorting capacities.

### FINANCIAL

Standard-Thomson Corp., aviation and automotive parts maker, reports sales of \$4,945,000 for the six-month period ended Nov. 30, 1958. Net profits before taxes were \$96,492, a 114 percent gain over the similar period in 1949.

### INTERNATIONAL

De Havilland Aircraft Canada reports a net profit of \$126,000 in 1958 compared with \$65,114 in 1949.

Japan-Soha has contracted to produce in France the Rolls-Royce Tay turbojet engines under license.

## Our Expanding Industry...

Cleveland Pneumatic Tool Co. has started a \$1.7-million program to expand production facilities for increased output of landing gear and other aircraft products. Company is aiming for an increase of \$1 million of the total, and an additional \$1 million will be sought through government funds to complete program. Total date to complete program: July 15, 1961.

Ford Instrument Co., Long Island City, N. Y., has received a multi-million dollar contract to produce transonic assemblies for the F-100A. Work is now in progress, production for the Navy.

Koester-Pfister Corp. will go after aircraft subcontract work for a plant at San Leandro, Calif., Bar 1 of the San Joaquin project bought by Farnsworth Corp. from Oberon Machinery Co. KP originally agreed to use plant for aircraft manufacture, but switched sites when the stripped-down aircraft program came along. Farnsworth is expected to reach 2,500.

All-American Airways, engineering and research division, Wil-

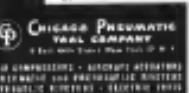
mington, Del., has been awarded a \$400,000 contract to produce special switches for military aircraft, and expects the order to be increased. The airline's manufacturing division has been participating in development of flight control and other special devices for the Navy.

Parker Appliance Co., Cleveland, is buying new machinery, along with more production space and establishing subdivisions to handle growing division business, the company's annual sales earnings was told. Building now is \$5 million. Parker has installed additional machinery and increased subcontracting to increase production of aircraft fittings and valves at its Los Angeles plant bought from the Sperry Corp. in 1956. On bought machinery for the Cleveland Valve division, totals back \$10,000 of its plant space leased to Thompson Products, or up to Los Angeles the Sperry Rubber Products Co. to catch up on production of synthetic rubber O-rings.



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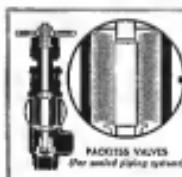
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## SIDLIGHTS

An oil company informant says proudly that it was *Reader's Digest* which will be ND gasolin's best-seller within a month.

Production Cost Climber: When a visiting Kaman-Fairchild development and sales team asked him to be a guest referee at a meeting, he replied, "I'm not a referee."

Capt. Eddie Riedelbacher's recent postscript to "Aero" (Vol. 1, No. 1), which was sent off to Florida, looks like other company postcards in N. Y. Friends of Harold J. Koers believe he will resign from GAF before long. Considerations in John K. Northrop's recent death of his mother, Mrs. Helen K. Northrop, 84, in Los Angeles:

Recent purchase of controlling interest in Aeronef (air) by the Rockefellers; interest is reported to be strong, plane manufacturing, powerplants, and aircraft are in mind; E-1, to accommodate heavy orders the firm believes it can get from Uncle Sam.

The special House subcommittee headed by Rep. John William (investigating government procurement practices) does not now expect to look into GAA, GAF or the military. Its most recent report released "gross misleading" in Bureau of Labor Statistics & Timmons.

The tank major audience producer without heavy new contracts, Morris, has ample space. Its Plant 2 is partly occupied by the Signal Corps, so is limited and maintained. It could go back into plane production or do so.

Regardless of what they are saying now, engine and aircraft manufacturers are in the market for medium-lift jets. Pratt & Whitney is a leader in the tank-majorly it has 2400 women out of 14,000 production workers.

Next issue of *Air Allure*, the "annual pasture," is due soon, and it probably will be the last to be published. *Aerospace Flight Magazine* has changed its name to *Flight* for its August, 1964, anniversary issue. *Aerospace* has joined the editorial staff at McGraw-Hill's Engineering News-Record.

## AVIATION CALENDAR

Jan. 22-25—Winter general meeting, American Institute of Electrical Engineers, Hotel Statler, New York.

Jan. 29-Feb. 1-4-5th annual meeting of the Institute of Aeronautical Sciences, Hotel Astor, N. Y.

Feb. 2-3—Third annual aircraft pricing and costing short course, University of Michigan, St. Paul, Minn.

## PICTURE CREDITS

• Photo: Palomar Observatory, (bottom) 17th November, 1963, 22:00 UT, 200" reflector, 30" off-axis; 3-Movie World.



EATON CLIMB TESTED—Right: L-17 Navion (above) shows no short-field capabilities using Eaton assist for slanted takeoff, while at right the fast Fairchild C-119 Packet Bird with sockets goes off at about 400 ft. Sudco's bolts are on the C-119.



3110 LOADS US-Big Shady H-115 is seen taking on ten Conocojet National Guardsmen with their luggage bags during simulated combat maneuver. Return is through landing hatch with lowered sliding door. Copter is powered by 600-hp P&W R-1340.

## Aviation News Picture Highlights



MORE POWER FOR AF—Herd-Milag F-54E (left) is seen in final assembly at Wright-Patterson's Propulsion plant.

AF ORDERS SEIBEL-Easted medium of Serial 5-640 (right) has been certified for flying (Krebs Work Jan. 15).



## WHO'S WHERE

### In the Front Office

**Howie Woodland** has been named general manager of Douglas Aircraft's maintenance, Test division. He will build the B-47 Strategic Bomber. Woodland, a veteran during World War II, is a veteran aircraft performance expert. He has headed the Western Proven Metals division of Douglas since 1948. In other top-level positions, the company moved in new products, like Ray Springer for El Dorado's Field Research on the Long Beach, Los Angeles, for Northrop.

**Ken Ellington**, director of public relations of Republic Aviation Corp., has been named assistant to Republic President Mandy Paul. Louis Shliss, veteran avionics writer recently with *Aviation News Service* at Washington, is joining Republic's public relations department.

**Henry Gerland**, treasurer of Bell Aircraft since 1942, has been appointed vice president in charge of all finance operations, including engineering, administration, sales and service. The move puts all the company's major activities under one head.

**Richard D. Mansfield** has been named vice president/general manager of Pacific Aerospace Corp.'s manufacturing division. He originally came to PAC as a design engineer specializing in test equipment, air control valves and pneumatic systems and is involved with developing the *Aerospace* pneumatic system.

**R. L. (Ranier) Smith** has been appointed executive vice president and director of Bloch-Lock Co., Cuban Co. maker of aircraft sensor. Smith was formerly assistant to the president of North American Aviation. James H. Eastman has been named vice president of marketing. He was formerly with management for Messerschmitt.

**Donald B. Shultz** is now technical assistant to the president of Albatross Aircraft Inc. in Lubbock, Tex. He was previously in research and testing at the director of research of Collins Radio.

### What They're Doing

**Thaddeus D. Wright** will become acting president of Cornell University on Feb. 1, succeeding Dr. Cornelius W. de Krafft, who is being granted a special leave of absence to serve as a special advisor to Dr. Wright. He will have the university's vice president for research.

**D. D. Fennell, Northwest Airlines** superintendent of aircraft engineering, has been made a member of NASA's group on long range problems, and M. Black Cuthill, NASA engineering pilot, has been named a member of the NASA's recommendations on meteorology.

## INDUSTRY OBSERVER

**No. 2 Douglas A2D Navy turboprop attack fighter** has arrived at Edwards AFB, Calif., to prepare for continuation of the flight test program interrupted by the crash of the original A2D prototype. Flight program probably will not be resumed, however, and findings of the accident investigation board are completely analyzed and checked against the second plane.

**Next version of the Douglas AD series, the A2D attack fighter, will take a large step up in power and become a turboprop plane, powered with Wright's new J40 engine, in the 10,000-lb-thrust class.**

**Mass-produced SE 2020 Aragonne 80-passenger transport**, first in a series of 15 ordered, has flown 50 minutes in its first test flight at Toulouse-Biarnes. Power is provided with four Pratt & Whitney Wasp Major R-4360 engines. The 54 engines and Corbin propellers and associated accessories for the first seven planes have been financed by ECA at a total cost of \$4.5 million.

**Glenn L. Martin Co.**, which produces some components of the B-57B C-119 combat transport under subcontract, has been asked to produce the same parts under subcontract to Kaiser-Frazer when the KF Willow Run plant gets rolling on Picket production.

**Jet fighters developments are moving fast.** Shindorff and Heller are both reported experimenting with jet-powered motor cutters in addition to the jet-powered cutters now being tested under USAF contracts by American Helicopters, McDonnell and Hughes Aircraft.

**Shortage of critical materials may give the British-designed T2000-lb-thrust Sagitta another boost as far as American orders to Wright Aeronautical Corp. are concerned.** The Sagitta is being built in this country now as a critical cold-cut or otherwise. It has two turbine wheels, annular combustion chamber about 2 ft. 6 in. diameter, section about 3 ft. long, probably accommodates about 12 stages. Higher capacity jet flow and boosted pressure ratio (7.1) are credited for the Sagitta's very high performance.

**Several U.S. manufacturers are using GE J-47 and Allison J-35 engines in their jet fighters and bombers are seriously considering the additional power which the almost interchangeable Sagitta engine can give them.** The Royal Canadian F-84F fighter is planning to switch to Sagittas, the Martin B-51 ground support bomber, now powered by three J-47s, is likely to test the Sagittas in an experimental installation when they become available, assuming that Martin finally gets the Air Force orders for production of the aircraft.

**Final decisions on the British B-17B/B-18B transport's future still await flight tests on the turboprop-powered B-17B still under construction and due for flight in 1952. But a British Civil Air Ministry spokesman has indicated that the rapid development of British jet transport types has already justified the 30-ton plane. There has been no cancellation of a production order for additional B-17Bs after the first two, if it is still.**

**What was probably the first intentional anti-freeze loading of a C-47 transport and its pilot was made recently at Ladd Field, Alaska, by Flight D of the 30th Rescue Squadron.** The loading was made experimentally to determine if such a procedure could be made operational to prevent loading delays of following aircraft in bad weather. The experiment proved successful, and it was further indicated that the glaze could be found on the snow-covered glides of the top plane thus if it waited for ground tags.

## Washington Roundup

### Defense Money

**Defense Department's budget for 1952 fiscal year, which starts July 1, will top \$62 billion.** This is based on an Administration guess which may be off a few billion dollars more or less. The military hasn't yet worked out its program, computed the estimated cost at \$66 billion.

The 1952 outfall is for:

- An Air Force budget of around \$20 billion, with about \$10 billion for procurement. So far this year, USAF has been given \$11.9 billion, with \$6.6 billion for procurement.

- A Naval aviation budget exceeding \$5 billion, with \$3.4 billion for aircraft procurement. So far this year, \$3.4 billion has been passed for Naval air.

- The Army will probably be over \$1 billion for the research, analysis and development programs of the two services included in procurement allowances—double the \$900 million they have for that year.

### Slow Build-up

**Proposed cuts are lagging far behind appropriations.** They are the forerunner of military power in being incorporated, industrial capacity, quantity. USAF is now spending at a rate of about \$6 billion a year. This is expected to amount to a rate of \$13 to \$15 billion by the end of 1953.

### Third Supplemental

**The services will get \$10 billion additional for this year, boosting the 1951 fiscal year total for Defense Department to \$53 billion.** The supplemental will continue money for more aviation activities down the line, procurement, plane, testing, industrial mobilization, research and development, increases in military personnel.

The third supplemental for 1951 will probably go to Congress around March, along with the 1952 fiscal year budget. Timing depends on when the military completes its program. It will be quickly signed by Budget Bureau and Congress. Money will then go to the high priority experts in a big field of defense contracts, starting the spring.

### False Assurances

**Constituted clause for man action on mobilization has resulted with the services' speed at committing funds over the past few weeks.**

There's still skepticism in Congress with the "date of departure" policy—building up a sort industrial base, but only a residue of might as being, from which the U.S. could rapidly spring into all-out mobilization. Thus, despite assurances of the President and Chairman of the Joint Chiefs of Staff, Gen. Omar Bradley, that such a base is all that's needed to meet an emergency, Congress maintains the President's assurance, also expressed by Bradley in Treasury's budget message a week ago. The \$13 billion which was set aside when the 1951 budget was drawn by President like this (D) "yes votes for active forces" a high state of training, available for accelerating if necessary and as a cushion for rapid expansion in the event of an emergency.

**Constituted now generally have a "wait and see" attitude.** If the international situation gets still worse, they will call for a bigger build-up of military strength.

### Broadening the Industrial Base

**Under the new policy to build up capacity that won't be producing until there's all-out mobilization, Washington will:**

- Promote public contracting mechanisms to subcontract and bid subcontract to the maximum. Purpose is to broaden user lines with defense work.

- Try to bring in many outside manufacturers into aircraft production as possible. This to build up a series of contractors with know-how.

- Clean building of new plants, even though existing facilities, in building, get going, may not be fully utilized. USAF's contract to Chrysler Corp. to build Pratt & Whitney jet engines in a plant yet to be constructed is the first sign of that.

- Give increasing weight to labor supply in letting contracts. Services want new bases trained for defense work, instead of over-time working of trained thumbs.

### Here and There

**Fleet deck carrier, New 30,000-ton deck deck, carrier** the Navy is going ahead with will cost \$23 million. \$45 million more than the \$16,000-ton United States. Price increase is accounted largely for the difference. It will be too big to go through the Panama Canal, will have to go around Cape Horn in transit from Pacific to Atlantic operations. Estimated loss as the canceled United States \$20 million.

**International subsidies.** The plan for repairing service pay from subsidy over international air routes is getting some study on Capitol Hill. Receipts from aircraft would be considered service pay, everything over and above that, is subsidy.

**Airline loan requirement that CAB notify RFC loans to airlines would be eliminated on a one-by-one basis by Sen. J. William Fulbright. He feels that when CAB makes a loan, the Board thereafter fails obligation to demand enough interest to cover the cost of the loan. For instance, the much-criticized RFC, would authorize a government to fail authority and responsibility over ABC activities to take over from the present five-year board of directors.**

**Plane training.** CAB, despite legislation authorizing a \$15 million pilot training program but in existing to see if the Air Force will go along before finally enlisting it. USAF would prefer to do all the pilot training for its needs. It's being permitted to support the services' training mission by threat of publicity if incorporation in its own training service program of World War II, and closer to GAA's pre-WWII War II flight pilot training programs.

**Sea plane.** Shipping companies, after a period of lists of contracts, are again taking air services over their routes. Rep. Eugene Kefauver's bill would open the way for them to do the air business.

**Moving CAA.** CAA is moved down for decentralization of the federal government. It's still subject to change by Budget Bureau and National Security Resources Board.

## Naval Aviation Orders Reach \$1.4 Billion

Nine airframe, five copter, five engine firms included.

By Alexander McNeely

Naval's 1951 aviation procurement is set to be a high gear, with principal air craft orders exceeding our current 15 manufacturers.

A status report from Navy's Bureau of Aeronautics in *Aviation Week* shows that the Navy has now consumed \$1.3 billion of a total of \$3 billion appropriated (including the second supplemental appropriation) for Navy air "base goods" as of Jan. 12.

(This Navy report, plus the story on Air Force procurement in the Jan. 15 issue of *AVIATION WEEK*, goes to complete a report on 1951 military aircraft expenditures as recently prepared. At Jan. 5, USAF had put out \$4.5 billion in contracts, leaving \$1.5 billion for engines and propellers, greater consumption. Virtually all of USAF's \$6.6 billion in appropriations had been committed.)

The picture for Navy aircraft shows that at a total of \$1.98 billion available for aircraft, including new planes, older plane spares, and supplemental craft, \$1.4 billion is already committed.

Second important news on the Navy aviation buying front, electronics, is not being purchased quite in capsule. But Navy has already committed over \$500 million for new aircraft electronics orders and has allocated over \$500 million for older equipment.

Comments that the Navy has only modestly recovered performance from Congress on the last amendment of its aviation buying with passage of the second supplemental to the 1951 budget early in January, the tally of funds already committed by Baker totals up another creditable sum for Rear Admiral A. M. Friske, head of Navy air procurement.

► **Plane Programs**—Nine aircraft manufacturers in the Navy 1951 program, to supply the following aircraft:

► Grumman Aircraft Engineering Corp., P-17 and F9F fighters, and AF-26 and AF-27 assault planes.

► Douglas Aircraft Co., F4D fighters, AD-4, AD-4N, AD-4W and AD-5D attack planes, R5D and R4D-1 transports.

► McDonnell Aircraft Corp., F4H fighters.

► Lockheed Aircraft Corp., P2V-5 and

## Navy Air Procurement Status

Funds consumed and obligated by the Navy Bureau of Aeronautics for 1951 fiscal year expenditures for Naval systems are shown in the following table prepared especially for *AVIATION WEEK* (figures as of Jan. 12).

MAJOR CATEGORY APPROPRIATED COMMITTED OBLIGATED

Category	Appropriated	Committed	Obligated
Construction of aircraft and related procurement	\$2,536,703,000	\$1,953,000,000	\$1,336,024,000
Aviation and supplies	457,700,000	262,129,000	116,431,000
Total	\$3,002,499,000	\$1,885,709,000	\$1,452,855,000

- Defers appropriated include base, first and second supplemental appropriations.
- Defers committed are funds assigned to a specific procurement.
- Defers obligated are funds for which contracts have been issued.
- Construction of aircraft and related procurement refers to new 1951 procurements for complete aircraft and related equipment.
- Aircraft and supplies refer to procurement of additional new parts for aircraft purchased under prior year budgets, plus expenditures for maintenance, operations, research and development.

P-5M patrol planes, P2V-7B cargo carrying planes, TO-1 jet fighters, transports, and R5D-1 transports.

► North American Aviation, AD-1 attack leaders, and probably F7F fighters.

► Convair Division, Convair AFM-1 flying boat and P4M-1 flying boat.

► Consolidated Vultee Aircraft Corp., X-11 flying boat.

► Fairchild Aircraft Corp., X-10 transports.

Five helicopter components are dividing the Navy's helicopter contracts for 1951, with Sikorsky, Piasecki and Bell the leaders. Models include Sikorsky H-19, H-34, H-52, Piasecki H-20, Bell H-13 and H-13A, Sikorsky H-32, and Bell H-9C cockpit.

► Goodyear Aircraft Corp., the only U.S. lighter-than-aircraft manufacturer, has a contract for 1951 Navy contract to supply X-21 blimps.

Principal engine companies supplying powerplants for Navy planes in 1951 contracts are:

► Pratt & Whitney Aircraft, R-2800 and R-4360 piston engines and J-42 and J-46 jet engines, and T-34 turboprop.

► Allison Division, General Motors, J-33 jet engines and J-40 turboprop.

► Westinghouse Electric Corp., J-34 and probably J-46 jet engines.

► General Electric, J-47 jet engines.

► Curtiss-Wright Corp., R-3350 piston engine and possibly Stinson jet engine.

► Hamilton Standard Division, United Aircraft Corp., as believed to be the largest. North American contractor with Aeropropulsion Division, General Motor Corp., and Curtiss-Wright Corp. sharing remaining jet engine business.

Tied toward large procurement difficulties for electronic, chemical and

radio equipment for USAF planes, indicated in the *Aviation Week* Jan. 15 story about Air Force procurement, is

readily apparent in the Navy procurement.

Principal contractors include Sperry,

Lear, Bendix Aviation, Raytheon, RCA, Collins Radio, General Electric, and Minneapolis-Honeywell.



ONE ARRANGEMENT of bigger C-124 would carry combat vehicles plus gear. Big plane brings air transportable army assets.

## Douglas Building Turboprop C-124

P&W YT-34 5500-hp. engines will permit 25,000-lb. gross weight increase and greater range or payload.

By Ben S. Lee

Air Force has signified that it is moving definitely and heavily into turboprop powerplants. The sign was the let went to Douglas Aircraft Co. of a development contract for a turboprop version of the C-124 Globemaster II.

Already under construction at Douglas' Long Beach, Calif., plant, the new heavy transport has been designated YC-124R.

The big craft will be powered by four Pratt & Whitney YT-34-F1 engines rated at 5500 hp each. Engaged in the development contract is a team of Douglas, Pratt & Whitney, and General Electric.

► **Turboprop Development**—Demand on the part of the Air Force to contract for a turboprop-powered C-124 has given rise in Washington to further speculation that USAF has also decided to go ahead with a turboprop version of the giant B-36. USAF's Senior Officers Board has been considering proposals by both Boeing and Consolidated Vol-

us for a successor to the B-36 supercharged engine booster.

Current discussion in favor of the turboprop engine Boeing XB-36 competitor or in favor of the turboprop inciting version of the C-124 as major expenditure for engine development during the next several years.

The supercharged engine Glendale plant C-124 is presently powered by four Pratt & Whitney R-4360s rated at 3500 hp each. In its present configuration, with a design gross weight of 175,000 lb., the C-124 can transport a payload of 30,000 lb. and has a range of 3000 miles.

► **Turboprop**—Development—Demand on the part of the Air Force to contract for a turboprop-powered C-124 has given rise in Washington to further speculation that USAF has also decided to go ahead with a turboprop version of the giant B-36. USAF's Senior Officers Board has been considering proposals by both Boeing and Consolidated Vol-

us. Another advantage gained is a sharp decrease in runway footage required for rollout. This would help USAF in its approachable reduction of overall operating costs.

Heavy transports, as the C-124, are range, have been given increased emphasis by both Army and Air Force as major mobility of armed forces becomes mandatory in the present global military thinking.

► **Air Transportable Arms**—Utilization of transports as big as the C-124 and the proposed YC-124R bring Army's vision of as all air transportable armory realization. Studies indicate that a fleet of 10 C-124A transports could, in one year, flight transport personnel and an equivalent amount of equipment from the United States to nearly any point of potential conflict with but one refueling stop. Basis of the study was a maximum payload of 16,000 troops with a combat equipment allowance of 240 lb. per man.

One of the most interesting studies held around the C-124 is use of the transport at takeoff weights less than the design weight. For example, one study showed in the combat load of an airfield, a 12,000-lb. loadless could be moved by the transport from a sea



authoritative public order of the state of the aircraft industry. The Defense Department's restriction is so tight that the German Bausen no longer will be permitted to complete the information, it also is silent.

## Step-up Is Due for NACA Program

The National Advisory Committee for Aeronautics program will be stepped up next year to better fit U.S. military air research.

The \$38 million requested in the 1952 fiscal year budget for NACA tops the second \$34 million NACA has thus year.

• The \$38 million for aeronautics and cameras is estimated \$33 million for aerodynamics research, \$18 million for powerplants research, \$6 million plus for aircraft structures research, \$1.7 million for aeronautical problems research, and \$1.1 million for operations of head-quarters in Washington.

• The \$35 million for construction is allocated for facilities at these locations: Langley Aeronautical Laboratory, \$5 million for modification of wind tunnels and to complete a facility for finding wind tunnels; Wallops Island Pilotless Aircraft Research Station, \$100,000 for service facilities; Edwards Air Force High-Speed Flight Research Station, \$1.5 million for passenger-operating facilities; Ames Aeronautical Laboratory, \$4.7 million by modification of wind tunnels and high speed air flow tunnel; Wright-Patterson Laboratory, \$1.5 million for facilities for research on unconventional fuels and utility systems.

## DOs Available for MRO Supplies

Notices Production Authority Administration W. H. Harrison has at last made DO procurement extendable is procurement of maintenance repair and operates supplies (MRO supplies), such as flight, dice, gages. But capital equipment like a machine tool, a specifically excludes from DO notices in the NPA order. Amendment 3 to Regulation 1, Section 12.5 (14).

The Defense Office produces part order the supply or service with DO priority if he would fail to make scheduled delivery of the end item without the supply.

Capital items get DO priority only through DO-95 or DO-31. In DO-95, the producer gets to the element and gets specific permission for DO on capital equipment up to a certain value. DO-31 applies to items of capital equipment being furnished for the government, which will take title or procurement

called prior to the meeting that these would be concessions on either side.

UAW-CIO workers at the plant were advised for a flat 15 cent hour increase. Fairchild management offer is a flat rate of 12 cents per hour to all production employees, plus an additional 5 cents an hour incentive to lead men of production and maintenance groups.

There was death on the runway. Other skidmarks had landed just prior to the crash.

## O'Donnell Returns to Lead 15th Air Force

Major Gen. Ernest "Kore" O'Donnell has been ordered to assume command of the 15th Air Force at March AFB, Brawnde, Calif.

O'Donnell, an outgrowth of proposed of strategic bombardment, is leaving command of the Far East Air Forces, border command to expand the 15th AF under current USM&P expansion program, an Air Force spokesman said.

The pilot, Capt. Phineas Berwick, was quoted by Air Force Pilot Assoc. representative Larry Cates as giving explanation of a runway after the plane was downed. He therefore landed at the end of the runway, at the middle of the runway, at the end of the runway.

But military observers in Washington and in Tokyo believe the new assignment was dictated in part by growing US interest both in the Far East and at the same time, the role and mission in the expansion of air power in the present Korean conflict.

On the employment of strategic air power in Korea, Gen. O'Donnell said shortly before he left Tokyo: "We simply have not been able to do the job we are extremely capable of doing.... It is ridiculous to sit down and blame us for inaction in Korea."



STRIKERS MIRE about on at Fairchild's Elgin, Ill., plant gate.

## Fairchild Strike in Third Week

Seventy of employees at Fairchild Engine & Airplane Co., Elgin, Ill., Midway, Ill., and Waukegan, Ill., have been on strike since Dec. 1. The workers, with little reduction from normal strength at employees that a recent agreement was near. U.S. Comptroller Service ordered a conference of company and labor heads of the strike-bound plant on that day, but neither side

had any time to meet. The strike was called for a flat 15 cent hour increase. Fairchild management offer is a flat rate of 12 cents per hour to all production employees, plus an additional 5 cents an hour incentive to lead men of production and maintenance groups.

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## Employment Is Up, Supply Down

Spot shortages of skilled manpower bring recruiting drives, training programs, longer workweek.

Aircraft employment continues upward in a tightening labor market, but the rate is not uniform in the various aircraft sectors. Strength in skilled sectors, including aircraft assembly, has stepped up increasing in outside work. Plastics are still slow to hire.

That is how the U.S. Employment Service steps up the aircraft labor rate index in the latest USES bi-monthly survey of 152 indicated area for November.

### Report to USES shows

• Aircraft employment upping, before last November, increased in October and November. State was given revised from 5 to 21 percent.

• Defense sales produced sensible aerospace demands in aircraft centers like Wichita, Los Angeles and San Diego.

• Employment expansion may not uniform. Fort Worth added twice in many workers as at previous two months Seattle and San Diego reported smaller gains.

• Shortages of skilled workers are still troublesome. At Hartford, lack of housing has slowed down the migration of workers into the area and remaining outside the area.



CHECKING THE SCORPION'S POWER

Rapid assembly in Nettling 7-35 Pratt & Whitney's J57 power plants is physically depicted in the above view, which points up the word "swing-out" installation, a distinct maintenance aid. Gearing is quickly removable, and the location of the engine permits ground-level handling. A helical beam, situated by the F-105's hand hydraulic pump, provides the power for mounting the engine to operating position.

• Buffalo: Tight labor supply. A few potential shortages. Hiring qualifications generally high.

• Chicago: Tight labor supply. Mass aircraft strength levels expected. Defense work not yet significant.

• Cleveland: Tight labor supply. Work week lengthened. Rapid long-standing maintenance in face of increasing labor supply.

### Columbus, D. Tight labor supply. No critical aerospace shortages.

• Dallas: Labor supply tight. Shifts of workers, longer hours and overtime work will not easily attract. Demand Henry in migration, accentuating of workers.

### Dayton: Tight labor supply. Spot natural shortages for unskilled, less-skilled, more basic tasks in workweek. In migration up sharply due to expansion of defense work.

• Detroit: Labor supply tight. Few defense orders yet. Some transfers and plant work work due to wartime shortages.

• Fort Worth: Aircraft employment up sharply. Large numbers of aircraft workers have moved outside of city despite slight overall labor supply.

• Hartford: Aircraft employment up sharply. Defense work, plant work, aircraft maintenance, aircraft assembly.

• Boston: Moderate labor supply. Some skilled occupations short.

• Redding, Conn.: Tight labor supply. Defense employment to no steady.

• Kansas City: Labor supply tight. Skilled shortages acute.

• Los Angeles: Labor supply slight, tightening. Large numbers reported as aircraft, metal, machinery, chemicals. Aircraft work, aircraft assembly, aircraft maintenance, aircraft maintenance, aircraft assembly.

• New Haven: Balanced labor supply. Increased hiring of women reported in supply of non-industrial workers.

• New York: Moderate labor supply. Growing shortage of materials and skilled metal workers.

• Philadelphia: Tight labor supply. Aircraft expansion anticipated. Retraining will take the next 18 months.

• St. Louis: Employment at general level despite slight labor surplus. Considerable migration of workers.

• San Diego: Tight labor supply. But defense needs peak loading in aircraft, shipyards, procurement. Labor supply (electronics workers) tightening. High defense demand will absorb skilled workers, skilled, dull, routine and women workers. Aircraft docks short despite upgrading and plant closing.

• Seattle: Tight supply. Employment despite high cost of living, due to non-union status in some industries. Skilled aircraft aircraft aircraft engineers.

• Wichita: Balanced labor supply. Aircraft expansion anticipated. Retraining will take the next 18 months. Aircraft industry short. Defense skilled workers needed for aircraft expansion.





## 1000 Horses to Start High-Thrust Jets

Short duration starts for new turbojets will demand powers which once were engine designers' goal.

Present turbojet radars that start at more than 1000 hp will be used as testbed engines of the next future. This is the startling observation of William D. Dowes of the Air Materiel Command's powerplant laboratory.

He reached this statement by pointing out that less than 20 years ago, 1000 hp was the objective of current engine development.

Despite projected times and the following views in "Standards for Turbojet Engines," a paper presented recently at the annual meeting of the Society of Automotive Engineers, in Detroit.

One hazard reciprocating engines, the 1500 hp R-4360, require only 5 lbf shear. The reason for this disparity of starting power requirements is that a reciprocating engine requires starting assistance to only 3 or 5 percent of its rated speed, whereas rotation is not required for starting an acceleration until the engine reaches the constant output speed, 1600 rpm, or slightly in excess of 20 percent of maximum rated speed (1990 rpm). Rated thrust of 1000 lb is required.

Electrical starters. This engine uses an electrical starter with torque characteristics approximately as shown. Current and torque are held very nearly constant from stall to 900 rpm, engine rotor speed by varying the voltage to the starter. The torque of an electrical starter using a constant voltage source would necessarily peak at stall and decrease with increasing speed. Assuming ignition at 600 rpm, this starter will accelerate the engine to 1990 rpm in approximately 35 sec. Peak power developed is 19 hp.

A constant torque device which develops 85 lb-ft of torque 10.5 hp at 1990 rpm is required to provide the torque needed to turn the engine. The fact that there is a torque drop at 1000 rpm is not fully deenergized by the characteristics of the unit. The drop of the curve of starter torque vs. speed must also be considered in predicting the performance of the starter on a given engine. Therefore, the power of a constant torque device which gives performance equivalent to the performance of a given starter must be added to its effective torque power of that starter.

The starting data just considered were determined from deceleration and acceleration rates on the engine. The starting data are given in Fig. 1. The data for  $T = 1600$  rpm at 20,000 lb thrust, where  $T$  is torque in lb-ft,  $\omega$  is angular velocity in rpm, and  $t$  is time in seconds.

Temperature Rise Effect. Fig. 2 shows data of deceleration and acceleration rates, from which data of Fig. 1 for drag and engine torque were calculated. During the deceleration rate, had we cut off at that time that was no combustion. During the acceleration the gas temperature in the turbine was maintained at a constant value of 1275 F.

It may be noted that the time to accelerate from 2000 to 3000 rpm may be reduced by approximately 20 percent by using the torque intercepts 2000 rpm.

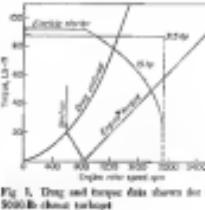


Fig. 1. Drag and torque data sheets for a 5000-lb thrust turbojet

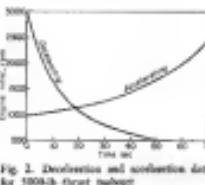


Fig. 2. Deceleration and acceleration data for 5000-lb thrust turbojet

Pressure Ratio Boost. The reciprocating engine went through the intervals of being supercharged not long after it became airworthy. If a similar rate occurs with the turbojet engine, which is rated at 5000 lb thrust, an increase in pressure ratio from 4.5:1 to 7.4:1 will be accompanied by an increase in thrust to approximately 9200 lb, and a decrease in fuel consumption from 1.15 to less than 9 lb per hr per lb of thrust.

The redesign will be accomplished by increasing the compressor horsepower rate from 135 to 480 F. at design speed and 65 F. inlet air temperature. This increase in temperature and the necessary redesign of a greater portion of the compressor stage and rotor will also assist.

Increased Air Flow. This together with the increase of compressor and turbine stages will increase the rate of increase of inertia of the engine rotor. The increase in engine weight will be brought about by an increase in pressure ratio and air flow through the engine.

At design speed the air flow is increased by approximately 20 percent by using the torque intercepts 2000 rpm.

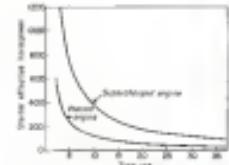


Fig. 3. Estimated power required to start 5000-lb and 10000-lb thrust engines

increase the engine rate of drag during starting.

► **High Speed Upped.** Another effect of the redesign is a more rapid deceleration of compressor efficiency as speed is decreased. Evidence of this effect is an increase in engine drag speed.

Whereas the engine which delivered 9000 lb thrust stalled at about 27 percent of rated speed, engine manufacturers have indicated that an engine such as the 9200 lb thrust engine may have an idle speed as high as 90 rpm of rated engine speed. Hence, we must expect a considerable increase in the static drag speed.

► **5000 vs. 9200.** In engine rate of drag curves of inertia, engine weight and static drag speed are plotted with the torque required to start the high pressure ratio engine. Fig. 3 presents curves of estimated torque required versus starting time for the 5000-lb and the 9200-lb thrust engines.

The curves show that the 9200-lb thrust engine will require approximately 60 hp for a 3-sec. start and approximately 400 hp for a 5-sec. start. The 9200-lb thrust engine will require approximately 180 hp for a 10-sec. start and 1200 hp for a 1-min. start. Since there is a marked increase of starting power required to reduce the starting cycle time from 30 to 1 min.

► **Intercept Factor.** It is noted that high strength drives will be required for engines which are to be started in 3 sec. or less. Such high strength engine drives may in some instances lead to increased engine weight. However, when one considers the interceptor aircraft for which seconds may be the difference between a successful and an unsuccessful interception mission, it may be argued that the time saved by the fast start is equivalent to a double increase in engine thrust in terms of the length of time required to effect the interception.

This argument may be countered by questions concerning the length of time required for a pilot to attain stability in the aircraft and the length of time

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required to warm up essential electrical or electronic equipment?

A further reason for considering 3-sec starts is that a very short duration starting cycle is required if a cartridge motor is to be used.

► **Starter-Generators**—One benefit previously no service was shared using either electric starters or starter-generators. The starter generator is very advantageous from the point of view that the motor will serve as a generator while the aircraft is in flight. Thus, most of the weight of the motor may be shared to the generator duty. But in reality a generator integrated in the motor is not much desired.

► **Ground-Supported Systems**—There are two basic types of starting systems: ground-supported and self-contained. In the former, the power source is external to the aircraft. In the latter, the fuel and the motor for generating the chemical energy of the fuel are contained in the aircraft.

A comparison of ground-supported electrical and air start systems shows that a 63-lb. electrical starter is rated at 16 hp. A 17-lb. air starter is rated at 15 hp. The air starter will provide a faster acceleration for the turboprop engine with a weight saving of 44 lb. per engine. In addition, large weight savings in ground equipment can be anticipated.

The generating set for the 16-hp electrical starter weighs 1620 lb. The gas turbine which provides the set for the 17-hp air starters weighs 1110 lb. Assembled as a module with fuel cells and compressor, it is expected to provide a transportable ground power source which will weigh no more than 600 lb.

► **Air Starter Adaptability**—The air starter is readily adaptable as a self-contained starter system. It is light in weight and it will use the aircraft's fuel.

The 16-hp electrical system may be made to approach being self-contained by using a 150-lb. battery. One such battery will provide sufficient energy to accelerate a 15-hp engine to a total of approximately 100 hp, but this performance cannot be obtained until the battery is not fully charged. And not when operating at very low temperatures.

Finally, because of weight considerations, development endeavor has passed from electrical starters to other types.

► **One Option**—Drewrel relates that in a recent report on the starting of aircraft equipped with ground-powered electrical starters, the maximum off-on of an interrupter has given the electrical system ground-powered criteria. "Even if the proper amount of power plants serving personnel, vehicles and drivers were available, the cost of equipment and the expenditure of manpower for starting a large number of aircraft

in a short time is beyond a doubt excessive."

Drewrel concludes that aircraft manufacturers will require that interrupters and cams after types of military aircraft be equipped with self-contained starter systems.

► **Factors Affecting Choice**—He goes on to say that there are some requiring consideration on the choice of starter system have thus presented themselves:

- Weight
- Suitability for operation under extreme cold
- Suitability as a completely self-contained system

Other factors which must be considered are:

- Bulk
- Number of starts which may be made without refueling
- Cost, depreciation, storage, handling and supply problems introduced if a special fuel is needed
- Vulnerability to enemy attack
- Adaptability to many types of aircraft

Several starter options can be developed which will be advantageous when considered in respect to several of the above factors. No one starter option which is optimum in all respects has been born in jet aircraft fields. For economy reasons, developmental effort can be expected to be concentrated on a few types.

► **An Opportunity**—With the air starters, the interrupter will replace the air to it as a gas turbine very similar to a turbojet engine. Instead of applying available storage in a propulsive jet, the gas turbine replaces it as compressed air. The available energy of the compressed air is enhanced by the starter's high speed turbine wheel. The rotation gear reduces the speed to a suitable cranking speed for the engine.

A speed sensing device causes the air to the starter to stop when a maximum cranking speed has been reached. The clutch is an automatic engage and disengage mechanism, required because the aircraft turbines are required to reach its peak allowable speed when the turbojet payload is at 30 to 35 percent of its operating speed.

► **Possible Starter**—Is a hydrogen powered air to air pump a suitable candidate for aircraft starters? The hydrogen peroxide is fed by a pump to a catalyst chamber operated at 300 psi. The catalyst decomposes the peroxide into steam and oxygen at approximately 1330 F. These products are very desirable working fluids for a turbine. The three elements of the starter will be similar to those in the air starters.

Development of the hydrogen peroxide starter is not being pursued because the peroxide is a special fuel item involving problems in procurement, storage and handling, and a 90 percent concentration which would be required

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the startup, has a freezing point of 13 F. ▶ **Cartridge Type.**—In the cartridge startup, the combustion products of the propellant form the working fluid for the turbine. The solid propellant is restricted from burning on its outer diameter and on each of its ends. It burns on its inner diameter. The charge is ignited by black powder set off electrically. A typical propellant composition for this application consists approximately 30 percent nitrocellulose, 20 percent nitroglycerine, and various additives to control the burning rate and bind the propellant.

▶ **Thermal-Time.**—Premix in the chamber for the combustion process is approximately 1000 to 1500 ps. These temperatures of the combustion products is approximately 3000 F. The adiabatic flame temperature demands that the startup opposite with a burning cycle of very short duration. Maximum pressure has been obtained by the use of a 3 sec. burning cycle. Propellants having a lower flame temperature are not used because such propellants presently available have these characteristics: less energy per unit weight of charge, ignition difficulties and more sensitive and more solid burning in the combustion gases.

For the present, a 3-sec. start is required by the cartridge startup. The short burning cycle will result in high temperatures in the propellant and a weight penalty in the startup and power loss in the engine.

▶ **Problem.**—Solid propellants now available are temperature sensitive—the burning rate varies with the temperature of the propellant. The variation is approximately -0.2 percent per deg F. Hence, startup power falls at low temperatures whereas the power is gained by the燃烧的温度.

There is also a storage problem. Propellants presently available tend to crack when stored below -40 F. Cooling increases the storage area and the auto ignition is likely to be at least as explosive even after the propellant is heated.

The propellant as an energy supply item, however, it is similar to the propellants used in solid rocket motors and in solid jet assist boosters.

In addition to the flame temperature problem there are design problems in the cartridge startup, involving safety devices. These concern protection against explosions, firing when the boost is not fully secured, and over-speed.

▶ **Over-speed Protection.**—This is a most serious problem. Over-speed will result from a direct startup. The over-speed protection must be considered by limiting the energy of the cartridge because the combustion of the cartridge cannot be stopped once it has been

ignited, ignition system, and combustion chamber of the engine. This must be such that the engine can light off satisfactorily within the 3 sec period of time and at a high enough rate. The startup will necessitate the engine—otherwise the energy spent by the startup will be wasted when the engine slows down to a speed at which it can satisfactorily start.

Despite the problems associated with the cartridge startup, its development is desired in the interest of obtaining a device which may be made self-contained without excessive weight as bulk. ▶ **Weights.**—Estimated weights of cartridge type starters are shown in Fig. 4. The startup weight is the weight of the assembly containing the cartridges, propellant, and drive units. This will not include the weight of the engine, including housing of the cartridge startup. Estimated weight of a gas turbine is plotted against a horizontal angle of power of the startup for which it has weight compared at.

From the startup torque estimate for the 9200-lb. thrust engine, the startup power required for a 20-sec start is 190 hp and the startup power required for a 1-sec start is 1200 hp. However, for the 1-sec start, the startup will be used having peak torque at stall with torque falling to zero at 125 percent of damaging speed. This will reduce the peak power of the startup to 110 hp and an effective 180 hp.

Weight of the cartridge startup is 25 lb. by the time of startup. 25 lb. and the weight of the gas turbine which requires compressed air to the turbine is 175 lb.

▶ **Comparison.**—A comparison of the weight of the air startup and of the cartridge startup in single and multi-engine aircraft is shown in Fig. 5. Taking conservative the weights of a multi-engine aircraft in not charged against the air startup assumed in that behavior, will normally be used for air for climb during, descent, and for passensive areas of the aircraft.

For the air startup option only one 7575 lb. air turbine compressor is required regardless of the number of engines, and 65 lb. is added to the air startup weight to account for the installation equipment required by the gas turbine compressor. The cartridge is estimated to weigh 10 lb. Housing for the cartridge weighs 25 lb. The cartridge housing is empty but not cartridge air stored in the system. The static engine installation of the cartridge startup weighs 128 lb. A complete installation of the air startup weighs 453 lb.

Both from the point of view of weight and volume, the cartridge startup will be preferred over the completely self-contained startup for single and two-engine aircraft. Davis says

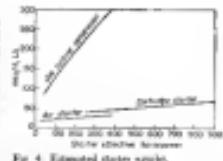


Fig. 4. Estimated startup weights.

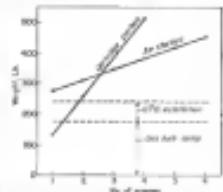


Fig. 5. Weight comparison of self-contained air startup system and cartridge startup in single and multi-engine aircraft.

stated. Moreover, startup torque for a single stage turbine will remain near its maximum value at the limiting speed of the turbine.

This is to increase the high temperature and high pressure of the cartridge gas turbine, within the turbine air inlet, a jet of gases which has a velocity much greater than the housing jet velocity of the turbine. As a result of the high torque at the limiting speed of the startup, it has a great tendency to over-speed.

▶ **Speed Limitation.**—In some designs of cartridge startup employing a single stage turbine, the limitation of speed is overcome by diverting the jet of cartridge gases away from the turbine wheel to increase the turbine wheel speed of the cartridge.

Because of the great tendency to over-speed, a negligible time delay is required of any device chosen to sense the over-speed and move parts to correct the over-speed condition. A more desirable approach to over-speed protection in the startup may be the use of a multistage turbine designed so that its torque falls to a zero value at the maximum allowable operating speed of the startup turbine.

▶ **Engines Launched.**—Other problems introduced by the cartridge startup involve the fact which must pass through the engine inlet from the cartridge housing in the startup. This does well over 1000 ps. and approximately 1000 F.

These problems introduced by the cartridge startup involve the fuel sys-

tem, ignition system, and combustion chamber of the engine. This must be such that the engine can light off satisfactorily within the 3 sec period of time and at a high enough rate. The startup will necessitate the engine—otherwise the energy spent by the startup will be wasted when the engine slows down to a speed at which it can satisfactorily start.

Then only the 25-lb. startup and the weight of some blades could be designed to be an air start. Thus, the air startup system may find use in some single and multi-engine jet powered aircraft.

▶ **Multi-Engines.**—The cartridge startup may find application on multi-engine aircraft in an installation such that one or two engines are started by the cartridge startup. The remaining engine would be equipped with air starters which would be energized by air bleed from the first engine started.

Military and design considerations are required to determine the type of startup system which will be used. The largest engines developing more than 3000 lb. of thrust will require starting power in excess of 100 hp. for a 20-sec start and in excess of 5000 hp. for a 1-sec start. The need for a self-contained startup system coupled with these high power requirements has led to the development of air starters and cartridge starters.

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3. Aircraft Propulsion and Gas Turbines, edited by G. W. Brown and R. W. Woodward Jr., Macmillan Engineers, July 1961.

## LORD DYNAFOCALS ADD 20 POUNDS PAYLOAD



## USAF Copter Instrument Course

Students qualify for blind flight after 10 hours of hooded instruction during basic copter training.

The Air Force is boosting the utility of its copters by applying the latest in flight techniques.

And the AF is making the precision-hoist hot box conceptual in the Service's helicopter pilot-training course where all students get 10 hours of hoisted flight instruction in a rotary-wing craft.

Here's how the program developed:

- ▶ In the Beginning—Preliminary studies of instrument flight in helicopters were begun in August 1959. Factory trainee basic, main, and Navy and Com. Control crews of helicopters were invited for observation.

In general, even basic was interested in the subject, but little actual flying was had, less accomplished.

The first flight flights were made seven months later in May 1960. A Sikorsky H-19 was equipped with simple flight instruments and a hoisted instrument hoist model. Standard flight instruments were used, but could not be relocated for better convenience.

After a number of these early flights, an actual instrument flight was made at Compton AFB, Waco, Texas, in conditions of 700 ft. ceiling and 4 miles visibility with rain. The aircraft took off flushed into the cloud cover, flew on course and held for approach clearance.

After landing, the copter took off again through the lowest visibility. No difficulties were encountered at any time during the flight.

▶ Basic Program.—These initial flight experiments led to the development of a

through-the-hands instrument flight system. LORD's advanced engineering group is proud to say the AFORD operation is the first of its kind of developing and applying of precision-made hoisted hoist data for product improvement. Let LORD engineers assist you to obtain efficiency and economical instrument flight in your aircraft problems. Write to: Attention of Product and Sales Engineering Department.

## LORD MANUFACTURING COMPANY ERIE, PENNSYLVANIA

Corporate Representative

Anthony E. Price, Engineering Consultant, Ltd.

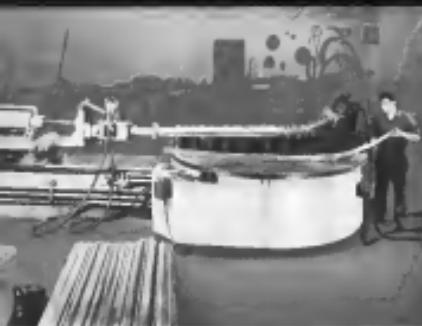
LORD

Vibration-Control Mountings  
... Bonded-Rubber Parts



# BATH the machine that forms ALL the shapes

SHEETS, EXTRUSIONS, TUBING, ROLLED AND FORMED SHAPES



Above: Stretch-forming and twisting around a compound curve in a multiplicity of planes



Showing stretch-forming after shaping and heat-treating at BATH. Pull or other direction is dictated by heat rates and table cylinders.



Aluminum part being correctly formed to complete circle.



Deep corrugated aluminum sheet accurately formed on the BATH machine.

Illustrating the largest stretching pressures are a light series of BATH. Some machines will handle from 1,000-lb. to 100,000-lb. pull.

The BATH machine provides the 14 essentials of a UNIVERSAL Contour Former. It is the only machine that can form virtually all the shapes that will be required in future aircraft design.

Hundreds of shapes, with compound curves and varying radii in many planes, are being formed on BATH exclusively because no other machine can produce them. Read the 14 essentials listed below and you will choose BATH—for only BATH provides them all.



Left: Photo illustrates how repeat extrusion section is stretch-formed on the BATH Contour Former. Rotating table combination permits forming sheets with most any combination of curves.

## TYPICAL DIE SET-UPS



Tool arrangement for "Spiral" work on the BATH Universal Contour Former.



Tool arrangement for "Spiral" work on the BATH Universal Contour Former.



Typical die set-up for stretch forming.



Typical compressive forming set-up.

## Only BATH Provides ALL These Features

1. Stretch and compress forming on one machine. Two-way acting cylinders and reversible table allows choice of forming method best suited to part.
2. Either sheets or extrusions are formed on the same machine. Jaw members are removable and adaptable to any cross section.
3. Isogradient, progressive, like a fine, forming on a rotating table permits special machine to do the work of a heavier one.
4. Heavy sections and parts that cannot be stretched, may be woven or heat-formed.
5. Full circles or spirals are formed in one setting for most any alloy.
6. Long parts up to 25 feet or more can be stretch formed without re setting jaws or dies.
7. Designed to stretch-form reverse bends without releasing tension on material.
8. Concentrated application of full tension over small areas of a large part as angularly change an extrusion while contours are being formed.
9. Four Set-Ups. Die is rotated as table is stretch formed, when dies or roll assembly, can then be easily adjusted to height desired.
10. Form or Roll in Two Planes. Produces parts with both horizontal and vertical curves simultaneously.
11. Material can be treated while being formed in varying horizontal and vertical planes.
12. Safety. Over 10 years of operation have resulted in no known accident to an operator. Machine damage is prevented by shear pins of critical points.
13. Built-In Machine Tool Standards. Deep sections, eliminating machine deflection, assures constant precise part production.
14. Faster production per heat with very low scrap loss, rarely running 1%.

Stretching aluminum "Z" extrusion being formed in both horizontal and vertical curves.



Above: Illustrates compress forming of heavy corrugated and flanged sections.



Illustrating progressive stretch-forming of a 28-Foot stainless extrusion.



Stretching large full spirals and spirals and formed on the BATH machine.

## THE CYRIL BATH COMPANY

7045 MACHINERY AVENUE

CLEVELAND 3, OHIO

1936

Alcoa 24S helped start  
the saga of the DC-3



Many of us have "grown up" with the Douglas DC-3. Still a great plane today, it revolutionized airline service 15 years ago. There's no match for its long record of safe, dependable performance.

The original DC-3 was one of the first commercial planes to be built principally of Alcoa 24S alloy—the high-strength successor to duralumin.

1951

Alcoa training aids spread  
flightmetal fabrication know-how

New employees working at new jobs...new ways to fabricate new materials. If that situation is slowing production in your plant, Alcoa flightmetal training aids can help. Bound books and technical manuals are available on all fabricating methods—forming, riveting, welding, braising, machining. Prepared by specialists, this instruction material can save you time and money in designing, specifying, fabricating.



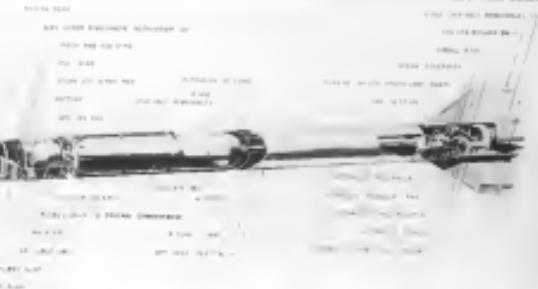
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Send the coupon below. "Alcoa Story" booklet, Alcoa 24S brochure and Alcoa 24S film may be borrowed or purchased, free in your local or 22nd year projectionist. ALUMINUM COUNCIL OF AMERICA, 1806A Gulf Building, Pittsburgh 12, Pennsylvania.



**ALCOA**

ALUMINUM MAGNESIUM



VIKING CUTAWAY is first release of interior arrangement of Merton-built, high-altitude research rocket. (Aviation Week, Jan. 15, 1951)



VIKING CUTAWAY is first release of interior arrangement of Merton-built, high-altitude research rocket. (Aviation Week, Jan. 15, 1951)



INTERNAL CUTAWAY shows use of Viking's electron beam. Heat insulation metal retains insulation.



AVIATION WEEK, January 22, 1951

## EQUIPMENT

### TWA Orders Collins Radio Units

\$500,000 purchase will outfit carrier's new planes and replace World War II communications equipment.

By Scott Reisinger

With almost \$500,000 in orders from a single airline, Collins Radio Co. is starting quantity production of improved VHF transmitters and receivers designed to replace World War II era pilot model new being used by many airlines and executive plane owners.

The big customer is Trans World Airlines, Inc. It is the first to place with Collins what amounts to an order for a complete line of VHF communications, 215 and omnidirectional, lately developed by the radio firm. Other airlines have purchased or ordered sets in one or two of these categories, but not in all three, the company emphasizes. It plans to begin delivery of the new equipment in March.

► **Half Million Mark**—Collins says it has received from TWA four orders amounting to \$155,000 for SIR-2 VHF communications navigation receivers and \$109,000 for TLR-2 VHF communications transmitters. These, added to a \$40,000 order for SIR-1 glide slope receivers (Aviation Week Dec. 11, p. 46) and one for a beacon receiver, total airline purchases amounting to \$355,000, plus others for control, dynamics, power supplies, shockmounts, necessary fixtures, instruments, spares and related equipment, add up to a figure approaching the half-million dollar mark.

Besides a desire to get rid of World War II surplus sets and retire itself with the best in radio equipment, TWA's large order at this time obviously was spurred in part by the fact the airline is adding a large number of new planes to its fleet.

In contrast, American Airlines was the first carrier to purchase surplus-produced TLR-2s. TWA's order is for SIR-2s, but has kept the remainder of its surplus equipment. An engineer pointed out that the airline, unlike TWA, is not adding any large numbers of planes in its fleet—it merely completed an shutdown and mostly reequipment program. They believe their present surplus sets will give good service for some time with present aircraft. To handle the increasing VHF communications load, they plan to modify their surplus VHF transmitters from the 20 to the 21 channel type, extending their controllers another two or three years. Glide slope receivers, however, may be

replaced within the next year as an "in-line" set—Collins' new sets, with the surplus equipment they replace.

► **Model TLR-2**—VHF transmitter (280 channels)—replaces transmitter section of World War II AN/ARC-1 transmitter (10 to 30 or more channels with modification).

► **Model SIR-2**—VHF communications-navigation receiver (280 channels)—replaces receiver section of AN/ARC-1 receiver (20 channels). RC-7510 locator receiver (no channels), and receiver used for separate omnidirectional receiver.

► **Model SIR-1**—glide slope receiver (20 channels)—replaces AN/ARN-5A receiver (3 to 10 channels with modification). It has

With an eye to giving airline radio equipment that will quickly become obsolescent, Collins has built into its sets the full range of VHF facilities as made by the Federal Communications Commission for present and foreseeable future use by civil aircraft.

To provide maximum operating convenience, versatility, and savings in space and weight, the SIR-2 VHF receiver and transmitter have been designed for compact construction and closely integrated operation with the TLR-2 VHF communications-navigation receiver. Two TLR-2s easily would be used in a single plane, one simply for communications, the other for navigation.

► **Advantages**—There are some of the advantages put forth by Collins for its equipment:

► A single type receiver provides all VHF communications, receiving, omnirange and ILS functions, except for glide slope, steeping enhancement, replacement and transducing, plus local oscillator.

► Oscillator on all channels allotted in the VHF communication and navigation frequency bands—operated to only a limited number of channels available in old sets.

► High power output, conveniently rated by Collins at eight with a better ratio to a 500-watt load. Collins says no other equipment ever rated at 8 to 10 watts actually has an output around four watts.

► Greater communication flexibility, permitting both duplex (combi) and simplex (hand and receive on the same



17L-2 VHF transmitter with 180 channels



17L-2 VHF receiver with 280 channels



31403 frequency selector control

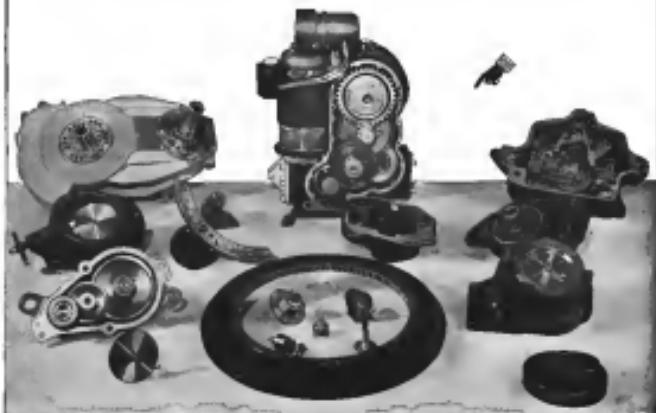
frequency), operation, or simpler only duplex AN/ARN-5A transmitters permit only simplex operation.

► Transmitter—Specifically, the transmitter provides a total of 180 channels spaced on a 100kc repetition basis on the VHF communication frequency band, between 118 and 135.5 megacycles.

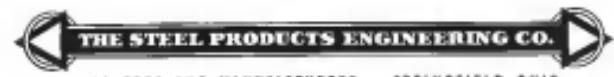
This is achieved with only 18 crystals, split into two banks, one bank containing 18 crystals and the other containing 10. Simplex explorers, two sets in the first bank are spaced one megacycle apart from 90 to 100mc, while those in the second bank of 10 are spaced 100kc apart from 20 to 20 to

(Continued on page 34)

## STEEL PRODUCTS— the Source for Gears and Geared Units



Want production of a single gear? A complete geared unit? The Steel Products Engineering Company can do the complete job, under one roof. We have our own engineering staff for design, test and development work, in addition to tool design, manufacture and approved quality control. Our facilities include complete up-to-date machining equipment, plus plating, heat treating, and welding. If you want precision contract manufacturing in a "package" make Steel Products your source. Visit our plant or send your inquiry or blueprint for quotation. Plant facilities booklet on request.



YOU CAN BE SURE... IF IT'S  
Westinghouse

## Millions of Air-borne Kilowatt-Hours Behind Every Westinghouse Alternator

You benefit from millions of kilowatt-hours generated by Westinghouse alternators. This power represents a lifetime of engineering, years of "payload" proof...the true measure of alternator performance.

Westinghouse planned, developed and made possible the a-c system for aircraft. You realize the result of this knowledge and experience in both services and products.

Now in a new 60-kva alternator, Westinghouse offers even greater planning scope for a-c systems. You can design your electrical requirements around alternators ranging from 400 m to 60 kva.

And Westinghouse alternators bring you recent advances...better high-altitude brush performance, exclusive shielded bearing design, greater mechanical strength per pound.

### Other A-C Equipment Present "On-the-Wing"

VOLTAGE REGULATOR  
ELECTRIC FLAME CONTROL RELAY  
EXCITER PROTECTION RELAY  
DIFFERENTIAL CURRENT PROTECTION RELAY  
3-PHASE MAIN-LINE CIRCUIT BREAKER  
CURRENT TRANSFORMER

For the best equipment and advice on a-c systems, call your nearest Westinghouse representative or write Westinghouse Electric Corporation, Small Motor Division, Aviation Department, Lima, Ohio. J-3887

Westinghouse  
LEADER IN  
AVIATION EQUIPMENT





# NEW AVIATION PRODUCTS



in places, for use on instrument panels, cable covers, covers for protruding instruments, around window frames and other applications.

Besides being tough and flame-resistant, the device is reported to be highly sensitive to impacts and is light in weight. Other favorable features of the product cited by the company are "superior" electrical insulation qualities, low rate of heat conductivity and water absorption and its capacity to resist static and alternating electrical conditions and initial corrosion.

It's easy to form "Rogite" into any pie or compound shapes, says the rubber company, which adds that it will not dry or wring, is easy to clean and is not affected by abrasion, gases and heat.

The material is available as several standard flat sheet sizes in five standard colors and five grades. Address: Rogite Center, New York 20, N. Y.

## Canopy Air Motor

The number and diversity of pneumatic equipment used in the aircraft environment consider last year's demand in the past few months.

Now the Rover Division of Lear, Inc., announces development of a pneumatic motor, Model RD 7440A, for all aircraft canopy actuators, lighting and other uses. The unit can be operated to open the canopy when the regular electrical solenoid fails.

Rover says the new device is highly suitable to many aircraft applications requiring rotary motion. It is rated for 1,000 psi air pressure and operates in either direction. A gear type of 0.330 in. in displacement, the motor has a high starting torque, which is practically proportional to input pressure according to the company. Motors are tested for a running range of 25 to 100 hr under continuous load. Standard energy output is 1.5 ft-lb per revolution with maximum speed at 1,000 psi. Speed is varied by controlling air feed to motor.

The unit weighs only 1.5 lb. and is designed with a maximum of parts. Only parts that move are bent, forged, gears which are on needle bearings. The drive shaft has splined connections, uses no shaft seal or packing. Except plain bearing, no leakage away from the shaft. The mounting flange on the motor is designed to accommodate an adapter for special instruments. Address: Rover Division of Lear, Inc., Elkhorn, Ohio.

## Rugged Plastic

Development of a thermoplastic sheet material for use in aircraft has been announced by United States Rubber Co.

Called "Raylite" the material is "extremely" tough and will not soften upon reheat, according to the company. It is classified as being



## Bomber Actuator

A safety actuator, designed specifically for use in the automatic pilot system of long-range bombers, is being used by the National Research and Engineering and Mfg. Corp.

The new unit was developed to help eliminate the risk of actuator damage and conforms to Specification AN/ANM-60, according to EEMED. It has a dual cycle of full load for one second clockwise, one second off, then full load one second counter-clockwise.

High temperature materials are used throughout and the actuator, rated at 11 lb. at 9,000 rpm, conforms to completely wear-free standards. Constant temperature at 110°C. is attained after one cycle. The actuator is equipped with a self-aligning clutch and brake, radius lever, round overdrive and torque limiting device. Address: 4426 W. Jefferson Blvd., Los Angeles 16, Calif.

## Drives Study Safely

A cable type stud driver, designed to eliminate sterilization and cleaning of cable threads and distribution of cable tie kits, is being marketed by Titus Tool Co.

With this tool, according to the firm, damage is avoided through driving the stud by means of pitch diameter pressure, rather than applying pressure on top of the stud. Designed for use both in factory and aircraft maintenance work, the All-Screw stud driver is available as a hand tool employing a "T" handle or as a power tool.

In its design, it represents a departure from regular methods of securing fasteners on aircraft driver outlets. This says the firm explain that as massive power is increased, the driving assembly, which has ball bearing cartridge, remains open as well as loadless, reducing damage on the tool and freezing the stud. Length of the collar grip on the stud can be adjusted and catch can be changed. Address: Main St., Dept. E, Titusville, Pa.

## ALSO ON THE MARKET

Model 415 honing machine will finish bore 4 to 40 in. in dia. at working stroke of 17 in. Machine carries three-speed belt-driven tool spindles, driven by 3 hp motor and has a 5 hp motor driving a V-belt system. It can run honing speeds from 1 to 70 fpm. Made by C. Alles Fitter Co., Cincinnati, Ohio.

Warning signs, designed to prevent lift truck operation in plants are available in safety kit from Tymco Corp. Brightly colored signs can be placed at strategic points in plant to warn truck operators of blind corners, traffic crossings, low head room, etc. Safety signs also included in kit. Available from Tymco Corp., Cleveland, Ohio.

Improved adjustable collar for milling machine cutting when given high accuracy requires only simple operation of loosening outer sleeve nut, the plain or narrow adjustment being made with special cassette wrench furnished. Made in Dayton by Regen Mfg. Co., Miamisburg, Ohio.

"Hand-D-Wipe" is plastic device with finger crotches that can be used by aircraft operators to clean efficiently and quickly excess oil and grease from hands at the end of the day. To bench or to clean, just wet it with oil. It's made by Baldwin Machine Works, 282 Eagle St., Brooklyn, N. Y.

Improved web-grinding wheel selector will remove grain all valves from 0 to 120 deg. handles stress from 16 to 90 lb. and has valve head capacity up to 4 in. in diameter. Plunge grinding is eliminated and an "inch" attachment is needed, says maker, Black & Decker Mfg. Co., Towson 4, Md.

combustion engineering  
with air...  
is in progress



squeezed air



... to shrink a heater

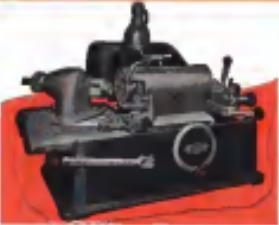
Here's news on the vital problem of shrinking the new half-life-shape jet wings: a heated air line that packs more heat into less space than ever before—by using "squeezed air"! Because space limitations caused conventional heating out of the picture, Surface Combustion engineers had to "heat their own heat" to achieve the necessary capacity and compression.

A small percentage of high pressure air is bled from the jet compressor, fed into a pressurized heater for a temperature boost up to as high as 672°F. The superheated air is then piped in small tubing to the distribution system . . . This job is only one of many Janitrol developments that hold great promise for aircraft of the future. If your heating problems call for imagination, foresight and a wealth of broad-based experience you do well to get in touch with your nearest Janitrol representative.

**Janitrol**  
AIRCRAFT AUTOMATIC HEATING with the whirling flame  
AIRCRAFT AUTOMATIC DIVISION • SURFACE COMBUSTION CORP., TULSA 1, Okla.

**SPEED** — is Essential  
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 more by equipping for  
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**SIOUX** WET VALVE  
 FACE GRINDING MACHINE

"More Valve Than Ever Before"

Eliminates heat and distortion. Produces fast finish and factory precision. Wet grinds valves, valve seats, tappets and rocker arms. It's years ahead of anything on the market.

**SIOUX** PERFECTED  
 DUAL ACTION  
 Valve Seat  
 Grinder  
 with Ball Bearing  
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Perfected work is fast time by the almost unbelievable speed of this valve seat grinder. Perfected dual action provides controlled vibration for grinding accuracy and disappearance of burr. Uniform finish is assured.

Sold only through Authorized **SIOUX** Distributors



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**ALBERTSON & CO., INC.**



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## FINANCIAL

### Copter Shares Lure Speculators

Increased military interest and possibilities of growth push stock prices above immediate earning potentials.

Having as a cycle of its own, a helicopter boom is breaking out all over, completely overshadowing the rapidly expanding pace of the conventional aircraft industry.

Sparked by intensive analysis of last year's in Korea war, an intrinsically different but radically developed by the manufacturers of the other craft.

Much of the trial and error work that accompanies new engineering development in its initial stages appears to have been completed in the helicopter sector along an technological program. Sufficient experience has been accumulated to warrant substantial initial orders for this newest type of aircraft.

This is now less aggravated by large scale expansion by helicopter builders now in active production and has enabled new large in the group leading prototypes in various stages of development but no sales.

► **Panzer-Boeing**—Subsidiary expansion has been undertaken by Panzer Helicopter Corp. As of the 1949 year-end, the company's backlog, including 30 units of aircraft, aggregated more than \$112 million, or more than double the amount of the previous year. The present backlog is estimated at excess of \$70 million. Despite incurring its own plant facilities at Marion, Pa., to produce greater capacity, Panzer is in advance of about 75 percent of its current business.

The sharp increase in bookings, together with the prospect for the future, has found a quick reflection in the market fluctuation of the company's common stock. Very low initial figures of any kind can equal the almost unpredictable price appreciation presented by the Panzer shares in recent time.

Immediately prior to Korea these shares were quoted around \$15.50 per share. In a series of peaks, this stock recently mounted a level where a bid of \$45 per share appeared.

The market up-while it is not due by the growth prospects of a new development, was accentuated by the nature of the company's capitalization. These are 136,350 shares of common stock outstanding, with management interests known to own more than one-half of the total.

The lower a very limited supply

no military sales as yet, has found sudden favor with speculators. Active dealings have taken the price of its stock in the over-the-counter market to about \$45 per share.

For a long time, only normal quotations existed for this security. Further reflection of the news is based upon a demand for shares of the **Cyclospore Company** of Atlanta. This company is working on an experimental machine which it hopes will prove sufficiently successful to win a military order.

The helicopter field is by no means the exclusive province of the specialty companies, demand for this product well established in this activity as a number of the old-line aircraft builders whose names persist, relatively, dwarf their helicopter projects.

**Bell Aircraft** has long been a leading contender for helicopter business and recently received a substantial increase in orders for its three-place Model 40-type craft from the military.

The **Sioux City** Aircraft division of United Aircraft, the power builders of helicopter, also has a material expansion underway to meet the demand for civilian aircraft.

McDonnell Aircraft has assumed as a competitor for more important helicopter business with its jet entry, "Little Hemi."

It is probable that if these major aircraft builders were not engaged in their other activities, but concerned solely with helicopters, they would have started far greater speculative flavor. Actually, however, the very nature of their broader diversification of aircraft affects them with far greater difficulty of operations and results. In fact, it will be the same management here as in the case of companies which made successful experimental excursions into the helicopter field by these associations.

► **The Good and Bad**—There is little doubt that the helicopter has found the speculative imagination. As with all new industries with solid growth possibilities, there is absolutely no relationship between prevailing market quotations and current investment values and earnings. Market valuations at any given time represent a potential and continuing future prospect. As these prospects come in direct perspective, market valuations are quick to adjust accordingly.

The constant speculation and interest shown in helicopters can prove constructive in that it does not possible additional source of capital. At the same time, speculative excess can prove harmful to the investor and future market value suffer at some future time when such financial assistance may be needed.

—Selling Attached

# AIR TRANSPORT

## Airlines' Lift Potential\*

### 4-ENGINED PLANES AVAILABLE ON PACIFIC

Passenger Carriers	SOUTH COUNTRIES			Total	No. of Planes
	DC-8	DC-6	Coastal Services		
Pan American	4	6	20	30	1
Pentair	26	62	—	90	—
Northwest	36	18	—	54	4
TWA	14	—	33	49	8
Amesair	13	40	—	57	—
Eastern	27	—	20	87	0
United	1	23	44	74	1
Braniff	9	6	—	15	0
Capital	25	—	—	30	2
USC	3	—	3	6	0
Colombia	4	—	—	4	0
Delta	6	6	—	12	0
National	—	6	—	12	0
Western	5	—	—	5	1
Iceland	8	—	—	8	0
Hawaiian	3	—	—	3	0
Interstate	5	—	—	5	0
Overseas	5	—	—	5	0
Cal. Eastern	2	—	—	2	0
Alaska	—	—	—	—	0
Transoceanic	18	—	—	18	0
Others	15	—	—	15	0
<b>Total U. S.</b>	<b>45</b>	<b>96</b>	<b>187</b>	<b>328</b>	<b>64</b>
<b>FOREIGN**</b>					
BOAC	39	—	31	90***	0
KLM	16	6	38	54	0
Air France	38	—	18	56	0
Sabena	—	2	—	12	2
Qantas	—	—	—	2	0
CP Air	—	—	—	—	0
TCA	28	—	—	28	0
Scandinavian	9	24	—	32	0
CMA	6	1	—	7	0
<b>Total</b>	<b>96</b>	<b>81</b>	<b>36</b>	<b>45</b>	<b>203</b>

\* As of Nov. 26, 1958.

\*\* Includes only large foreign lines.

\*\*\* BOAC fleet includes 32 non-U. S. planes.

Source: CAB.

able element, subject to call in emergency.

These are the basic problems being worked on to either reduce or increase military air assets as needed.

► **Contract or Ropulation?** Airlines do not need to have any air cargo planes in a contract with the Air Force, and Defense Production Administration okay, then the military may resort to requisition. With this as a bargaining point, an Air Materiel Command will probably negotiate a successful round of contracts on a cost-plus-fee basis, subject to renegotiation. A formula for determining what the airlines shall get per ton day is the mall name "AMC" for a "per ton per revenue" factor. According to MATS, however, this might allow a profit for the airlines lower than what it would earn as scheduled domestic service in wartime, but far enough for a percentage rise each in 1959.

AMC wants annual cost cuts as much as to have some "flexibility." The present 65-cent contract left in a funding that, right now, the participating airlines AMC pay the airline cargo planes.

► **Pre-Emergency Equipment**—Major Gen. Lawrence S. Kotter, commander of MATS, says a plan is "under consideration" now to begin domestic services and airlines with the proper funding to enable them to transfer planes almost over night to emergency supply tasks. Other items are cargo planes, permanent contract or attachment, and special radio. This is for the Air Force to supply and pay for installation of the fittings that will make the domestic plane ready to go on short notice. This involves not the present installation of extra gas tanks, for instance, but necessary fittings so putting in the tanks would take little time.

► **Plane Types**—On the current Tokyo lift only DC-8s are operating under contract. When KLM starts the services asked for, they should be kept by their DC-8, Braniffian and Convairliners. MATS agreed.

However, if many more planes are required, the question will arise as to who shall supply them and what types. One thing MATS wants is long range, especially for evacuation of wounded. An example: General Kotter points to currently in the air strip 150 miles Tokyo to San Antonio. The flight from this run was made on Convair 580 planes by a C-97, which carried 50 patients to Los Angeles, San Antonio.

The only aircraft capable of such a run are the Stratocruiser, the DC-88, and the Super Constellation. MATS has three types capable of extra long range—the C-74, E-57, and C-124. MATS has ten C-54s; they are still in operation. Some C-47s are on order, and some are in training for future operations.

But, and a few are operating, MATS has only two C-124s as yet, both on test and training, but more are on order. The C-97 and C-144 are general purpose, long-range planes. The C-124 is a broad area plane especially designed to take large concentrated loads such as tanks.

Backbone of the MATS airfield is the old DC-8, and it will stay that way for a long time to come. The large C-97 and C-144 are on order, but they will not come due to taking over the body of the DC-8.

What type aircraft MATS will need in a wartime will depend mostly on the special situation. So there is no way airlines can pay so as to avoid a particular type plane first, except possibly DC-8s and Stratocruisers. It is possible that the Stratocruiser might be an urgent MATS need.

► **Present Situation**—While plans to place the service's aircraft for emergency requirements are under way, the present Kora lift is running smoothly. General Kotter says: Canadian, Belgian, RAF, U. S. airies, and MATS planes are co-operating. Negotiations are no longer the chief bottleneck, MATS is paying equal attention to booking up its basic maintenance facilities, moving to lower operating costs from the central areas of a city over 10 hours per day. Some MATS units are now hitting at 15 hours per day.

► **How Many Planes?**—The question of how many aircraft MATS might take in emergency demands almost solely on how many MATS needs. General Kotter says that while some airlines might make a strong case for the need of the home front for a good-sized 4-engineer fleet, it is possible almost all 4-engineer planes



HELP FOR THE AIR TRAVELER  
Flight commissioners check in at Transocean Air Society's new office at Los Angeles International Airport. This is the society's first report office and will be used as a test for future expansion of the service to other airports.

## Ground Rules for Wartime Airlift

Air Force preparation for fast 4-engine plane roundup may include advance modifications for long-range use.

Air Force is now working up plans for swift, efficient utilization of defense transport planes in case a full-scale war should develop.

Since since the emergence of the Pacific lift, include a formula for airline contract price determination per ton day, establishing minimum equipment per aircraft, the strategic plane fleet, instead of after the emergency will be determined (depending on mission requirements) to determine which airlines shall give how many planes to the lift; cargo plane requirements which might mean conversion

of some passenger airlines to freight service.

Military Air Transport Service and other agencies must make plans based on present equipment available. The few additional planes on order for delivery this year to MATS are not enough to change the swift plane supply much. That supply includes about 375 MATS planes, about 327 U. S. airline 4-engineer planes. The MATS planes are devoted mostly to cargo. The 500 odd aircraft, mostly passenger, are the first

right have to go to war, while scheduled services would carry only high priority war burdens and military cargo and personnel, mostly at 2-engine planes.

► **As to convertibility of civil planes** in MATS use, here is what General Kotter said in April of last year:

"An air transport survey shows that only 25 percent of the 4-engine aircraft is capable of carrying cargo, and 10 percent are cargo carriers capable of interchanging with military aircraft (2500 miles). Operational factors show

that about 70 percent of the 4-engine civil aircraft could be made immediately available to the military as D-Day, and within one week about 90 percent. I must stress that I am speaking of availability and not of their actual adaptability to military use."

Spreading up the time in which the 95 percent would be made adaptable to MATS use is the present priority plan. Cost and price negotiations could come after the planes have gone into operation on the airfield."

## CAB Blueprint

Bentzel outlines agency proposals, his views of airline problems.

Cost Attenuates Board Chairman Dick Bentzel has revealed a new blueprint for CAB action that may mystify the agency's present or future as to what it will do.

Among Bentzel's points:

► **Re-examination of CAB policy** is be-

ing made by a planning staff of top-level Board personnel.

► **Personnel and rates** for all domestic airways (by year or by route next year in one of CAB's most classified objectives.

► **Expansion—not reduction** of civil air transport in time of war is planned by both the military and CAB.

► **Minimization** for civil air transport

is expected from National Security Resources Board's Industry Task Group study by March 15.

► **DUO** planned to pay for essential and supplementary planes proposed by Air Conditioning Committee (Aviation Week Jan. 15), has been approved by the National Production Authority and other pertinent agencies.

► **Some** airline offices will be transferred from the banks to the local war air service.

► **Subsidy** application from civil pay will be heavily supported by CAB. Related is the heavy support of the banks covering their value from its reliance on subsidies. Subsidy will undoubtedly be required to continue providing some financial aid to the banks.

► **U. S. international** will continue to get CAB and State Department negotiations on the same stand, but CAB and State do not plan to use its threat of mutual exclusion to get U. S. into a first strike.

► **CAB negotiations** has only started. Organizational changes mostly started and moving along may make the Board operation quite different from what it has been in the past.

► **New CAB Programs**—Here are areas project the CAB planning staff is working on now:

► **Route** structure must be shaken up by "streamlining unnecessary capacity but, preserving 'desirable' airports and 'terminals,' particularly voluntary, I mean by truck or caries at minimum speed."

► **Freight** efficiency is a major CAB objective. The route changes will be most popular at the top. Local service will get the cripes consider poor as far as self-support is concerned.

► **Freighter certificates** may soon be changed to a different set than now. CAB will then load lines must be treated in a wholly different way. They will not be resulting self-sufficiency for some time. CAB plans to have their load of the whole freight. And, "within a local service is used and justification will exist for its continuation."

► **Subsidy** separation from civil pay will be established as soon as possible by both the CAB and the Senate Interstate and Foreign Commerce Committee. CAB will arrive at a service rate of pay showing the pay needed for actual physical transport and handling of mail













## EDITORIAL

**A CAPABLE MAN, BURIED**—Russell Adams' removal from his expert status on the Civil Aeronautics Board is still one more sad mark of Washington politics. The Board needs his experience and his expertise. Instead, the President set only his faith to support him at the end of his term, but relegated him to a State Department office that specializes in the complexities of multi-lateral treaties. One wonders whether even this third-rate appointment might have been forthcoming if Mr. Adams had not earned the loyalty and respect of some important persons on Capitol Hill. We deplore the manner in which Russell Adams, a talented and conscientious public servant, has been treated unkindly, and the partly political reasons prompting the action.

**MR. FINLETTER AS A STATESMAN**—We commended the Secretary of the Air Force, Thomas K. Finletter, for his intelligence, understanding and skill in smoothing out some of the rough edges that had developed in the opening stages of the Kraus-Fairchild-Air Force negotiations. Fairchild's president, Richard Bausell—like so many human beings—is a very reasonable individual when approached in something less than a dictatorial let's-knock-the-heads-together attitude. The Secretary Finletter fully justified when informed of the early meetings between Fairchild and other USAF people.

**IF KOREA BLOWS OVER**—We heard this phrase as recently as last week from a high officer in one of the military services in Washington. It's a shocking experience to encounter as an important defense officer in the one U. S. city where most of us hope there is fullest recognition and understanding of the danger the free world is in. And where you want to think the most vital meetings are being held day and night to plot the next intelligent war out of our nests, remind you how, "If Korea blows over, we might find ourselves out on a limb with an unnecessary defense blanket."

Unfortunately, this attitude appears still to be typical of some of our government leaders. How naive, we don't know. But we do know that to the piping, impugning press writer, Washington certainly does not reflect the state of emergency we read about in the newspaper headlines.

As one of our most thoughtful aircraft presidents told us the other day, our economy is still gray, and the aircraft industry (and any other defense industry) cannot

possibly meet the pretensions goals the President has set as long (for example) as machine tool makers are unprepared with preparations for new models of automobile engines. A defense official a few days later told us privately that the objectives of his job are actually hopeless of accomplishment as long as we continue to try superimposing a war economy on a full peacetime machine.

**WITHOLDING FACTS FROM THE PUBLIC** will become a major issue within the coming year, we fear. Keen observers in the Capitol note tell-tale signs of an increasing tendency by government officials to dry up information channels, discourage individual press initiative in covering the news, refuse to answer press queries. The most insidious beginnings are becoming apparent at the top levels of government. There is nothing much in the way of official orders yet. Public information officials themselves are still doing a creditable job in answering queries and releasing information, but several don't expect this condition to last long.

Control necessarily in the battle areas is frequently necessary, of course. But every new generation of the military seems bound to learn the hard way that even battle information cannot be bottled up forever. And that the longer fact-information builds up, the bigger are the hastened rumors and the ultimate explosion.

There are indications back on the home front that every vestige of information relating to aviation production and order placed with industry may eventually come under the Administration's verboten stamp of Congress and the press do not take some nonsense to stave off the tide. Nor is this iron curtain likely to halt only aviation activities. All other weapons information from the same blanket. From weapons and direct war developments it is only a few short steps to political omniscience as well.

No one is eager to head the Russians' choice reforms back on a platter. But in a democracy we have always driven a hard bargain at a point where we decide some information is important in the interests of the United States as it is to a potential or active enemy. This is a choice on government.

The public, the press and Congress should be alerted at once to this developing tendency in Washington. It is all very well to hide the most vital facts from the enemy, but failure to turn the light of publicity on bureaucratic mistakes might also be instrumental in helping wreck the country.

Robert H. Wood



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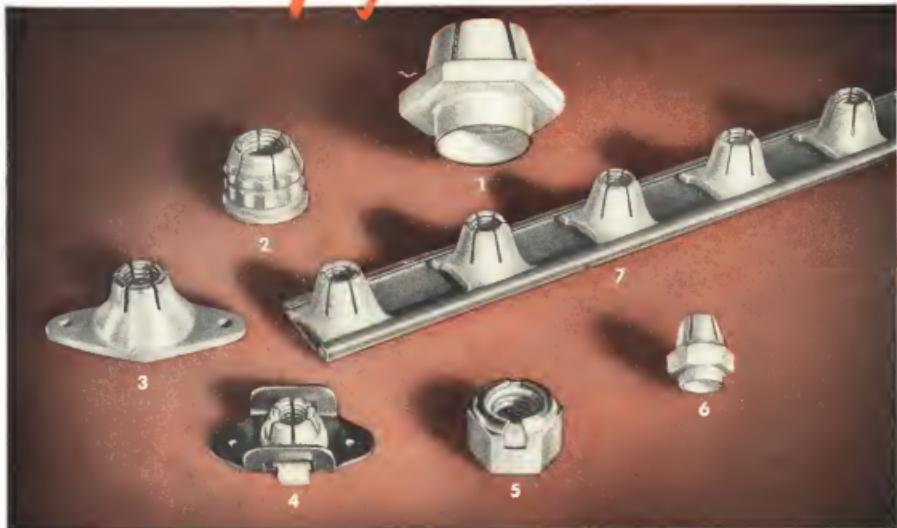
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